The Engineering review.

INSTITUTION OF ENGINEERS IN SCOTLAND.

THE ENGINEERING REVIEW

EDITED BY
C. EDGAR ALLEN.

VOLUME X.

JANUARY TO JUNE,
1904.

LONDON:
THE ENGINEERING REVIEW CO., LTD.,
104, HIGH HOLBORN, W.C.

8
S
7E573
v.10
1904
31998

INDEX TO VOLUME X.

ABSTRACTS of papers read before the Iron and Steel Institute, *see* Iron and Steel Institute
Accumulator, The New Edison, (*Ed.*), 4
Aetheric Transmission of Electrical Energy, Tesla's Experiments on, (*Ed.*), 293
Africa, *see* Cape to Cairo Railway, Central South African Railways, *and* Egypt
Air Compressor, ("Boreas"), New Type of Electrically-driven, 55
Alcohol Engines, *see* Carburettors, *etc.*
Alloys Research, (*Ed.*), 197
America(n), U.S.A. Heavy Tank Engines in, 147
—— *versus* British Locomotives, 146
Appliances, *see* New Machinery and Appliances
Apprentices, *see* Engineering Apprentices
Ashford, J., Increasing Profits, 420
and W. H. Wilson (Conductors), Works Management and Workshop Practice, (*see also* "Workshop Practice"), 420, 479
"Workshop Costs," by Sinclair and Pearn, reviewed by, 479
Autocar, Electric, (Motor-Driven Coach), North-Eastern Railway, 248, 508

BADEN State Railway, New Locomotives for, 399
Bale, M. P., Modern Woodworking Machinery, 127, 225, 308, 381, 476
Barker, J. H., Steam Turbines *v.* Reciprocating Engines, 203
Bars, *see* Test Bars
Bell, C. L., The Manufacture of Coke in the Hüssener Oven at the Clarence Iron Works, and its Value in the Blast Furnace, 515
Berlin-Zossen (Electric Railway) High-Speed Tests, 141
Blast Furnace, The Modern, A. H. Sexton, 7
Boiler, *see* Water-Tube Boiler
Boiler-Tube(s), *see* Ferrules for Locomotive *do.*
Bridges:—Cantilever Railway Bridge over the Zambesi on the Cape to Cairo Railway, 244
The New Vauxhall Bridge, W. N. Twelvetrees, 466
The Widnes and Runcorn Transporter Bridge, 28
British Engineers and Egypt, (*Ed.*), 101
Locomotive(s), American *v.*, 146
— Exports in 1903., 46
Butler, E., Carburettors, Vaporisers, and Volatilisers used in Petrol, Alcohol, Kerosene, and Crude Oil Engines, 111, 317

CALEDONIAN Railway, The, Thirty-Ton Mineral Wagons on, (*see also* Great Northern), 244
Cape to Cairo Railway, The, Zambesi Bridge on, 244
Carbon, Generation of Electrical Energy from, (Jone's Method) 412
Carburettors, Vaporisers, & Volatilisers used in Petrol, Alcohol, Kerosene, and Crude Oil Engines, E. Butler, 111, 317
Carpenter, H. C. H., and B. F. E. Keeling, The Range of Solidification and the Critical Ranges of Iron Carbon Alloys, *table*, 513-14
Catalogues Noticed, 251, 342
Central South African Railways, The, Locomotives for, 490
Clerk, D., Internal-Combustion Motors, 503
Coaches, *see* Motor-Coach, *and* Motor-driven Coach
Coal Consumption, Superheating and, (Central Marine Co.'s Apparatus), 507
Hoist, New Hydraulic, at Prince's Dock, Glasgow, 58
Combines, Industrial, in Scotland, B. Taylor, 388
Compound Locomotive(s), Cylinder Ratios in, 490
in France, Sauvage's paper *cited*, 394
The Future of, in Great Britain, 335
Compressor, *see* Air Compressor
Conservation, The, of Energy, (*Ed.*), 1
Correspondence, Trade Statistics, R. Mc D., 60
Cranes, *see* Electric Cranes, *under* Workshop Practice.
Crewe (Railway Works), Economy and Ingenuity at, 242
Crude Oil Engines, *see* Carburettors, *etc.*
Curtis Steam Turbine, *see* Theory of Steam Turbines.
Cylinder Ratios in Compound Locomotives, 490

DALBY, J. H., High-Speed Engines, (Valve Motions), 16
de Glehn, *see* French Compound Engine
De Laval Steam Turbine, *see* Theory of Steam Turbines
Depthometer, The, (Murphy's), 57
Details of Private Owners' 20-ton Wagons, 43, 144, 242, 376
Dimensions, The, of Test Bars, Influence of, (*Ed.*), 3
Docks, *see* Prince's Dock
Dockyards, *see* Government Dockyards
Dupré, A., and Capt. M. B. Lloyd, Explosions produced by Ferro-Silicon, 515

ECONOMICAL Use, The, of the Steam Jacket, A. H. Gibson, 107
Economy, The, of Live-Steam Feed-Heaters, A. H. Gibson, 26, (*see also* 200)
and Ingenuity at Crewe (Railway Works), 242
Edison Accumulator, The New, (*Ed.*), 4
Editorials:—
Alloys Research, 197
British Engineers and Egypt, 101
Conservation of Energy, 1
Education of Engineering Apprentices and Pupils, 105
Influence of the Dimensions of Test Bars, 3
Invention, 198
Liverpool and Southport Electric Railway, 295, (*see also* 173)
Live-Steam Feed-Heaters, 200, (*see also* 26)
Local Obstruction to Tramway Enterprise, 296
Metropolitan Highway Reform, 295
New Edison Accumulator, 4
New Hypothesis on the Strength of Materials, 297
Single-Phase Traction Motors, 102
Tesla's Experiments on Aetheric Transmission of Electrical Energy, 293
Education of Engineering Apprentices and Pupils, (*Ed.*), 105
Egypt, British Engineers and, (*Ed.*), 101
"Elastic Limit," Use of the Term, in Metals under Stress, W. C. Popplewell, 299, (*see also* 360, 434)
Electric Rail Autocar, (Motor-Driven Coach), North-Eastern Railway, 248, 508
— — Welding on the Glasgow Tramway System, B. Taylor, 119
Electrical Appliances, *see* Accumulator, Electrical Topics *under* Engineering Abstracts, New Machinery and Appliances, *and* Workshop Practice.
Energy, Aetheric Transmission of, Tesla's Experiments on, (*Ed.*), 293
— — Jone's Method for Generating, from Carbon, 412
Electrically-driven Air Compressor, New Type of, (the "Boreas"), 55
Electrification of the Liverpool and Southport Section of the Lancashire and Yorkshire Railway, 173, (*see also* 295)
on the North-Eastern Railway, 139
Energy, The Conservation of, (*Ed.*), 1
Engine(s), *see* French Compound, Heat, High-Speed, Intermittently-working, Petrol, etc., Reciprocating, *and* Tank Engines
Engineering, *see* Locomotive and Railway, *and* Marine *do.*
Engineering Abstracts, *see* Separate Index
Apprentices and Pupils, Education of, (*Ed.*), 105
Engineer's Bookshelf, *see* Reviews
Engineers, *see* British Engineers
Exhaust (Steam), The, of Intermittently-Working Engines, The Utilising of, J. W. Pearse, 214
Experiments with Rapid-Cutting Steel Tools, *tables*, 33, 157, 231, 327
Exports, British Locomotive, in 1903., 46
Extension of the Railway Motor Coach System (Great Western Railway), 45

FAN, *see* Motor-Fan *under* New Machinery and Appliances
Feed-Heaters, Live-Steam, Economy of, A. H. Gibson, 26, *see also* 200
Feed-water Regulator, New, (Mumford and Anthony's), 55
Ferrules for Locomotive Boiler Tubes, Webb's Tool for making, Crewe, 242
Fish Wagons of the Great Central Railway, 402
Foreign Competition, Some Conditions of: Mining Royalties and the Iron Trades, T. Good, 453
Foster, F., The Theory of Steam Turbines, 373, 458
France, Compound Locomotives in, Sauvage's paper *cited*, 394

French Compound Engine, The de Glehn, on the Great Western Railway, 46
Furnace, *see* Blast Furnace
Future of the Compound Locomotive in Great Britain, 335

Germany, *see* Baden, *and* Berlin-Zossen
Gibson, A. H., The Economical Use of the Steam Jacket, 107
The Economy of Live-Steam Feed-Heaters, 26 (*see also* 200)
Glasgow, New Hydraulic Coal Hoist in, at Prince's Dock, 58
Tramway System, Electric Rail Welding on, B. Taylor, 119
Gledhill, J. M., High Speed Tool Steel, 405, 497
Good, T., Mining Royalties and the Iron Trades: Some Conditions of Foreign Competition, 453
Government Dockyards, The Premium System in, 298
Great Britain, (*see also* Scotland), Future of the Compound Locomotive in, 335
Great Central Railway Accelerations, 47
Fish Wagons, 402
Route to London, 144
Great Northern Railway, The Enlarged "990" Class Locomotives on, 140
High-Capacity Wagons on, 43
Great Western Railway, Extension of the Railway Motor Coach System on, 45
French Compound Engine on, 46
Locomotive for Suburban Traffic, (*see also* Lancashire and Yorkshire Railway), 240
Green's Patent Valve for High-pressure Steam, 346

HEAT-ENGINES, Thermo-dynamics of, *letter*, S. A. Reeve, 202
Heater(s), *see* Feed-Heaters
Heavy Tank Engines in America, U.S.A., 147
High-Capacity Wagons on the Great Northern Railway, 43
High-Pressure Steam, Green's Patent Valve for, 346
— -Speed Engines, Valve Motions of, J. H. Dales, 16
— — Tests on the Berlin-Zossen Electric Railway, 141
— — Tool Steel, J. M. Gledhill, 405, 497
Hydraulic Coal Hoist, New, at Prince's Dock, Glasgow, 58

IMPROVEMENTS in Textile Machinery, (Hallensleben's), 168
Industrial Combines in Scotland, B. Taylor, 388
Influence of the Dimensions of Test Bars, (*Ed.*), 3
Institute and Institutions, Papers read before, *see* Internal-Combustion Motors, *and* Iron and Steel Institute.
Intermittently-Working Engines, Utilising the Exhaust of, J. W. Pearse, 214
Internal-Combustion Motors, D. Clerk, 503
Invention, (*Ed.*), 198
Iron and Steel Institute, The, Abstracts of Papers read before ;—
Explosions produced by Ferro-Silicon, A. Dupré and Capt. M. B. Lloyd, 515
Influence of Casting Temperature on the Properties of Iron and Steel Castings, P. Longmuir, *tables*, 512
Manufacture of Coke in the Hüssener Oven at the Clarence Iron Works, and its Value in the Blast Furnace, C. Lowthian Bell, 515
— of Pig Iron from Briquettes at Herräng, Prof. H. Louis, 514
Notes on the Production and Thermal Treatment of Steel in Large Masses, C. Johns, 511
Plastic Yielding of Iron and Steel, W. Rosenhain, 511
Range of Solidification and the Critical Ranges of Iron Carbon Alloys, H. C. H. Carpenter and B. F. E. Keeling, *table*, 513–14
Iron Trades, The, Mining Royalties and: Some Conditions of Foreign Competition, T. Good, 453
Johns, C., Notes on the Production and Thermal Treatment of Steel in Large Masses, 511
Johnson, Mr. S. W., Retirement of, from the Locomotive Superintendency, Midland Railway, 5
Jone's Method for generating Electrical Energy from Carbon, 412

KEELING, B. F. E., (joint author), *see* Carpenter
Kerosene Engines, *see* Carburettors, *etc.*

LAKE, C. S., Notes on Locomotive and Railway Engineering, 43, 139, 238, 334, 394, 490
Lancashire and Yorkshire Railway, (*see* Liverpool and Southport Electric *do*), Solution of the Suburban Traffic Problem, (*see also* Great Western Locomotive), 238
Lathes, Rapid Reduction in, as compared with Forgings, F. B. Kleinhaus, 90
Letter(s) to the Editor ;—
Thermo-dynamics of Heat-Engines, S. A. Reeve, 202
Trade Statistics, R. Mc D., 60
Liverpool and Southport Electric Railway, 173, 295
Lloyd, Capt. M. B. (joint author). *see* Dupré
Local Obstruction to Tramway Enterprise, near London, (*Ed.*), 296
Locomotive(s), *see* American, Compound, Great Western, *etc.*
for the Central South African Railways, 490
Experiments on the London and N. Western, and London and S. Western Railways, 340
Exports, British, in 1903., 46
New Express, London and North-Western Railway, 496
— — 4-4-2 Type, North Eastern Railway, 140, 334
"990" enlarged Class, Great Northern Railway, 140
and Railway Engineering, Notes on, C. S. Lake, 43, 139, 238, 334, 394, 490
London, Great Central Route to, 144
Traffic, (Metropolitan Highway Reform), 295
London and North-Western Railway, Locomotive Experiments on, 340
New 4-4-0-type Express Passenger Locomotives on, 496
— Saloons for Royal trains, 399
London and South-Western Railway, Locomotive Experiments on, 340
Longmuir, P., Influence of Casting Temperature on the Properties of Iron and Steel Castings, *tables*, 512
Louis, Prof. H., Manufacture of Pig Iron from Briquettes at Herräng, 514

MACHINERY, *see* New Machinery, Textile, *and* Wood working *do.*
Marine Engineering and Shipbuilding Notes ;—
North-East Coast District, 49, 149, 245
Scotland, 53, 152, 246
Steam-raising by means of Oil, *tables*, 52, 150
Materials, *see* Strength of *do.*
Metallurgy, *see* Iron and Steel Institute, The, Abstracts of Papers read before, *and* Separate Index to Engineering Abstracts, *see also* Iron Castings *under* Workshop Practice
Metals under Stress, Use of the Term "Elastic Limit" in, W. C. Popplewell, 299, (*see also* 360, 434)
Metropolitan Highway Reform, (*Ed.*), 295
Midland Railway, Retirement of Mr. S. W. Johnson, Locomotive Superintendent, 5
Military Tractor (Hornsby's), 165
Mineral Wagons, Thirty-Ton, on the Caledonian Railway, (*see also* Great Northern), 244
Mining Royalties and the Iron Trades: Some Conditions of Foreign Competition, T. Good, 453
Modern Blast Furnace, The, A. H. Sexton, 7
Woodworking Machinery, M. P. Bale, 127, 225, 308, 381, 476
Motor(s), *see* Internal Combustion *and* Single-Phase Traction Motors
Coach, Steam Passenger, Taff Vale Railway, 337, 394, 493
— System, Railway, Extension of, (on the Great Western Railway), 45
Driven Coach, (Electric Autocar), North-Eastern Railway, 248, 508
Fan, A New, (Gibbs'), 347

NEW Books and Catalogues, *see* Catalogues, *and* Reviews.
Edison Accumulator, The (*Ed.*), 4
Hypothesis on the Strength of Materials, 297
New Machinery and Appliances: —
Depthometer, (Murphy's) 57
Electric Rail Autocar (Motor-Driven Coach), North-Eastern Railway, 248, 508
Electrification of the Liverpool and Southport Section of the Lancashire and Yorkshire Railway, (*see also* 295), 173
Feed-Water Regulator, 55

New Machinery *(continued)*—
Generation of Electrical Energy from Carbon, (Jone's Method), 412
Green's Patent Valve, (for High-Pressure Steam), 346
Hydraulic Coal Hoist at Prince's Dock, Glasgow, 58
Improvements in Textile Machinery, (Hallensleben's), 168
Military Tractor, (Hornsby's), 163
Motor-Fan, (Gibbs'), 347
New Type of Electrically-driven Air Compressor, 55
Superheating and Coal Consumption, (Central Marine Engine Co.'s apparatus), 507
Upright Water-Tube Boiler, (Hornsby's), 343
New Vauxhall Bridge, The, W. N. Twelvetrees, 466
Works of Messrs. Graham, Morton & Co., Ltd., 416
North-East Coast District, (Marine Engineering and Shipbuilding), 49, 149, 245
Eastern Railway, Electric Rail Autocar, (Motor-Driven Coach), on, 248, 508
— — — Traction Developments on, electrically-operated trains, 139, New Express 4-4-2-type Engine, 140, 334
Notes, *see* Marine Engineering and Shipbuilding Notes
On Locomotive and Railway Engineering, C. S. Lake, 43, 139, 238, 334, 394, 490

Oil, Steam-raising by means of, 52, 150

Parsons Steam Turbine, *see* Theory of Steam Turbines
Pearse, J. W., Utilising the Exhaust of Intermittently Working Engines, 214
Petrol, Alcohol, Kerosene, and Crude Oil Engines, Carburettors, Vaporisers, and Volatilisers used in, E. Butler, 111, 317
Popplewell, W. C., The Use of the Term "Elastic Limit," in Metals under Stress, 299, (*see also* 360, 434)
Premium System in Government Dockyards, (Admiralty Notice), 298
Prince's Dock, Glasgow, New Hydraulic Coal Hoist at, 58
Private Owners' 20-ton Wagons, Details of, 43, 144, 242, 336
Problem, The Suburban Traffic, (*see also* Solution of *do*), 238

Pupils, *see* Engineering Pupils

Rail, *see* Electric Rail Autocar
Rail-Welding, Electric, on the Glasgow Tramway System, B. Taylor, 119
Railway Engineering, Notes on Locomotive and, C. S. Lake, 43, 139, 238, 334, 394, 490
Motor Coach System, The, Extension of, (on the Great Western Railway), 45
Railways, *see* Baden State, Berlin-Zossan Electric, Caledonian, Cape to Cairo, Central South African, Great Central, Great Northern, Great Western, Liverpool and Southport Electric, London and North-Western, London and South-Western, Midland, North-Eastern, *and* Taff Vale Railways
Rapid-Cutting Steel Tools, Experiments with, *tables*, 33, 157, 231, 327
Rateau Steam Turbine, *see* Theory of Steam Turbines.
Ratios, *see* Cylinder Ratios
Reciprocating Engines, Steam Turbines *versus*., J. H. Barker, 203
Reeve, S. A., Thermodynamics of Heat-Engines, *letter*, 202
Regulator, *see* Feed-Water *do.*
Remarkable Railway Bridge, A, (over the Zambesi, Cape to Cairo Railway), 244
Replies, *see* Electric Cranes *under* Workshop Practice
Research, *see* Alloys Research
Reviews and Notices of Books, 62, 154, 251, 419, 427, 487; *see also* 479
Rosenhain, W., The Plastic Yielding of Iron and Steel, 511
Royalties, *see* Mining Royalties
Runcorn, *see* Widnes

Scotland, (*see* Glasgow), Industrial Combines in, B. Taylor, 388
—— Shipbuilding and Marine Engineering in, Notes on, 53, 152, 246
Sexton, A. H., The Modern Blast Furnace, 15
Shipbuilding, *see* Marine Engineering and
Single-Phase Traction Motors, (*Ed.*), 102
Solution of the Suburban Traffic Problem (*see also* G. W. Locomotive), Hoy's views *cited*, 239
Some Conditions of Foreign Competition: Mining Royalties and the Iron Trades, T. Good, 453
Steam, *see* Exhaust, High Pressure and Live-Steam
Jacket, The, the Economical Use of, A. H. Gibson, 107
Passenger Motor Coach for Taff Vale Railway, 337, 394, 493
Raising by means of Oil, 52, 150
Turbines, the Theory of, F. Foster, 373, 458
— *versus* Reciprocating Engines, J. H. Barker, 203
Steel, High-Speed Tool, J. M. Gledhill, 405, 497
Tools, Rapid-Cutting, Experiments with, *tables*, 33, 157, 231, 327
Strength of Materials, The, New Hypothesis on, (*Ed.*), 297
Suburban Traffic Problem, The, and its Solution, 238—240
Superheating and Coal Consumption, (Central Marine Engine Co.'s apparatus), 507

Taff Vale Railway, Steam Passenger Motor Coach for, 337, 394, 493
Tank Engines, Heavy, in America, U.S., 147
Taylor, B., Electric Rail Welding on the Glasgow Tramway System, 119
Industrial Combines in Scotland, 388
Tesla's Experiments on Aetheric Transmission of Electrical Energy, (*Ed.*), 293
Tests and Testing, *see* High-Speed Tests
Test-Bars, Influence of the Dimensions of, (*Ed.*), 3
Textile Machinery, Improvements in, (Hallensleben's), 168
Theory, The, of Steam Turbines, F. Foster, 373, 458
Thermo-dynamics of Heat-Engines, *letter*, S. A. Reeve, 202
Thirty-Ton Mineral Wagons on the Caledonian Railway, (*see also* Great Northern), 244
Tools, *see* Steel Tools
Tool-Steel, High Speed, J. M. Gledhill, 405, 497
Traction Developments on the North Eastern Railway, electrically-operated trains, 139; New Express 4-4-2-type Engine, 140, 334
Motors, Single-Phase, (*Ed.*), 102
Tractors, *see* Military Tractor
Trade Statistics, *letter*, R. McD., 50
Traffic, *see* Suburban Traffic Problem
Tramway Enterprise, Local Obstruction to, near London, (*Ed.*) 296
System, The Glasgow, Electric Rail-Welding on, B. Taylor, 119
Turbines, *see* Steam Turbines
Twelvetrees, W. N., The New Vauxhall Bridge, 466
Twenty-ton Wagons of Private Owner, Details of, 43, 144, 242, 336

United States, *see* America, U.S.
Upright Water-Tube Boiler, New, (Hornsby's), 343
Use of the Term "Elastic Limit" in Metals under Stress, W. C Popplewell, 299, (*see also* 360, 434)
Utilising the Exhaust of Intermittently-Working Engines, J. W. Pearse, 214

Valve, Green's Patent, (for High-Pressure Steam), 346
Motions of High-Speed Engines, J. H. Dales, 16
Vaporisers, Volatilisers, and Carburettors used in Petrol, Alcohol, Kerosene, and Crude Oil Engines, E. Butler, 111, 317
Volatilisers, Carburettors, Vaporisers, and, used in Petrol, Alcohol, Kerosene, and Crude Oil Engines, E. Butler, 111, 317

Wagons, *see* High-Capacity, Mineral, *and* Twenty-ton Wagons
Water, *see* Feed-Water
Water-Tube Boiler, New Upright, (Hornsby's), 343
Welding of Electric Rail-joints on the Glasgow Tramway System, B. Taylor, 119
Wilson, W. H., (joint editor, *see* Ashford), A Modern Machine Tool Shop, 481–86
Woodworking Machinery, Modern, M. P. Bale, 127, 225, 308, 381, 476
Works Management and Workshop Practice, conducted by J. Ashford and W. H. Wilson, (*see* Workshop Practice), 420, 479
Workshop Practice, New Tools, and Works Management;—
Adjustable Steam Port Core-Box, J. C., 178
Air Compressor, An, The Making of, Works Manager, 259
Boiler Tubes, H. H. B., 258
Dynamometer for Propeller Thrust, and Skin Friction, (Marine Construction), Exmouth, Q. Q., 261
Electric Cranes, (R. R. L. H.), Clydebank, 99

Workshop Practice *(continued)*—
Improving a Scribing-Block, E. H. D., 179
Increasing Profits, J. Ashford, 420
Fitting and Erecting Cost, 422
Machine Cost, 422
Piece-work Prices, *etc.*, 421
Supply of Small Tools, 423
Inexpensive Pipe-Wrench, J. A. S., 180
Iron Castings, 257
Joint for Small Girder Work, H. L. 261
Large Stay for Small Lathe, W. C. M., 178
Lathe Chucks, *etc.*, "Observer," 97
Machining Propeller Blades, 348
Milling Cutters, 349
Modern Machine-Tool Shop, (Richards & Co.'s), W. H. Wilson, 481-86
Improvements in Boring-Mills, 482
— — Side Planers, (Seller's), 483
Sand-blast Treatment of Castings, 483

Workshop Practice *(continued)*—
Moulding Boxes, J. A. P., 349
New Machine Tools, 254, 423
Lathe, Hetherington's High-Speed, 254
— Tangye's High-Speed, 425
Milling Machines, Archdale's Motor-driven, 423
Planing Machines, Smith & Coventry's Cushioning device for, 424
Radial Wall Drill, Swift's Electrically-driven, 254
Thread Milling Machines, (Pratt & Whitney, U.S.A.), 254
Repairing Broken Gear, J. B., 340
Supply of Lubricant to Machine Tools, H. H. B., 99
Trying-over Locomotive Valve Gear, Loco. Man., 180
"Workshop Costs," by Sinclair and Pearn, Review of, J. Ashford, 479

Zambesi Bridge to Cairo Railway, 244

INDEX TO ENGINEERING ABSTRACTS.

Applied Electricity :—
Edison Accumulator for Automobiles, W. Hibbert 58,
Electrical Speed Indicator for Automobiles, (Chauvin & Arnoux'), J. A. Montpellier, 83
Electrolytic Stripping of Brass from Iron, C. F. Burgess, 81
Energy Diagram of Electric Circuits, J. L. Latour, 82
Frequency Measurements of very Rapidly Alternating Currents, J. W. Salomonson, 84
Investigations on the Pulsations of Continuous Current in Rotary Converters, (Banti's theory), E. Cramer, 81
Oil-break Switches and Fuses, 84
Photometric Tests of the Nernst Lamp, *tables*, 86
Production of High Frequency Alternating Currents, Prof. H. Th. Simon, 82
Speed Regulation of Three-phase Motors, W. Burkard, 84
Systems of Electricity Distribution, C. T. Mosman, 83
Teplitz-Aussig Wireless Telegraphy Overland Line, M. Albrecht, 80
Testing Large Alternators under Full-Load Conditions, B. H. Behrend, 82
Yorkshire Electric Power Co.'s Generating Station, 83
Construction :—
Armoured Concrete Footbridge at Toulouse, 71
The Barrage across the Nile at Asyût, G. H. Stephens, 432
Borings for the Bohio Dam, Panama Canal, R. C. Smith, 268
Breakwater at Buffalo, New York, E. Low, 268
Brickmaking Plant, 357
Bridges for Electric Railroads, W. J. Watson, 267
Burntisland Harbour: Construction of the East Dock, R. Henderson, 431
Concrete Foundation and Cement Filler for Brick Pavement, O. L. Gearheart, 521
— Metal Construction, (Novorossisk Wharf), E. Villet, 356
— Reinforcement, J. Kahn, 70
— Steel at the New Concert Hall, Strasburg, (Hennebique System), G. Espitallier, 269
Dredging Channels through River Bars, (Russia), S. Maximoff, 270
Effect of Stresses on Cantilevers and Beams, T. Mackenzie, 265
Erection of Iron Bridges, R. S. Scholefield, 358
Eye-bar and Cable Designs for a (Suspension) Bridge at Cologne, 186
Ferroinclave: A Fireproof Building Material, H. F. Cobb, 521
Freezing as an Aid to Excavation, J. H. Brace, 431
Graphical Calculation of Flange Stresses in Girders and Trusses, O. Sanne, 522
Impermeable Concrete, (Feret's), R. W. Lesley, 70
Improved Tunnelling Shield in Chicago, 357
Ingenious Method of Handling I-Beams, (New York), 270
The Latest Progress in Shaft-Sinking, Chief Engineer Riemer, 265
Lowering the Sill of the Ramsden Dock, Barrow-in-Furness, L. H. Savile, 433
Melan Concrete-Steel Bridge at Dayton, Ohio, *tables*, 429
Modern Workshop Design, (Canada), Durable Flooring in, A. Pringle, 524
New Drawbridge over Newark Bay, New Jersey, (Central Railway), 523
— Italian Stone-Arch Railway Bridge, (Morbegno), 72
Novel Transporter Bridge, (Nantes), G. L. Le Coco, 268
Practical Design of Steel-Concrete Structures, W. W. Colpitts, 270
Preventing the Moisture of Walls, F. Walter, 266
Proposed Thames Barrage, (Gravesend), T. W. Barber, 267
Record of the Fireproof Buildings in the Baltimore Conflagration, 357
The Sanding-up of Tidal Harbours, A. E. Carey, 266
Saving a Sinking Concrete Arch Bridge, 430
Spherical and Framed Domes, E. Schmitt, 269
Construction *(continued)*—
Steel Smokestack of the Land Title Building, Philadelphia, 70
Suggestions for (Engineering) Shop Construction F. A. Scheffler, 185
Towers and Anchorages of Manhattan Bridge, New York, 358
Trench-Excavating Machinery, E. McCullough, 434
Troitsky Bridge, St. Petersburg, P. Bodin, 356
Underpinning of Sub-Surface Railways at Paris, M. Wickersheimer and M. Weiss, 269
Use of Cement Grout at the Delta Barrage in Egypt, Major Sir R. Hanbury-Brown, 431
Williamsburg Bridge, New York, 358
Electrical Engineering :—
Action of Light on the Velocity of Formation of Accumulators, D. Tommasi, 447
Alternating-Current Rectifiers, C. F. Burgess, 527
City and South London (Electric) Railway, P. V McMahon, 286
Continuous-Current Pulsations of Rotary Transformers, R. Elsässer, 526
— *v.* Induction Motors, H. M. Hobart, 526
Copper Losses and Utilisability of Double-Current Generators, F. Horschitz, 287
Distribution of Electricity in Shipyards and Engineworks, J. A. Anderson, *tables*, 445
Eddy Currents in Dynamo Machinery, W. M. Thornton, 286
Electric Traction with Alternating Currents, A. E. Eborall, 286
Electrical Driving, B. Longbottom, *table*, 527
Floating and Booster-controlled Batteries for Fluctuating Loads, L. Lyndon, 444
Hackethal Wires for High-Tension-Current Lines, B. Böhm-Raffay, 287
The Multiplicator Rod, being a Wave-Meter for Wireless Telegraphy, Prof. A. Slaby, 285
New Hysteresis Meter, (Blondel's), 285
Pulsations of Current in Converters, (Banti Phenomenon), C. Montù, 284
Routin Electro-Mechanical Compounding System, F. Brock, 444
Single-Phase Current Traction, M. Latour, 193
— Motor without Collector, Dr. M. Corsepius, 192
— Railway Motors, B. G. Lamme, 446
— — System of the Union Electricity Co., Berlin, F. Eichberg, 524
Some Causes of Supertension in High-Tension Plants, Dr. G. Benischke, 444
Speed Variation of Continuous-Current Motors by Shunt Control, H. M. Hobart, 284
Static Discharges in Electric Circuits, P. H. Thomas, 193
Three-phase Working at Dublin, W. Brew, 446
Voltage Regulation in Alternating Current Systems, H. S. Meyer, 447
Engineering Physics :—
Electrical Foucault Pendulum Systems, E. K. Adams, 354
Electro-dynamic Condensers, J. Seidener, 69
Motion of Gases in Pipes and Use of Gauges (Pitot's) to determine their delivery, R. Threlfall, 355
Radio-Activity, F. Soddy, 68, 185
— — Experiments in, H. S. Allen, 264
Resistance of Plane Surfaces in a Uniform Current of Air, T. E. Stanton, 184
Steam Tension for Temperatures above 100 degrees, H. F. Wiebe, 354
Theory of Radio-Active Phenomena, R. Schenck, 355
Transmission of Heat in Multiple-Effect Evaporators, M. Sekutowicz, 69
Wave-Meters and their Use, J. Dönitz, 69
Light, Heat, and Ventilation :—
Heat Radiators Using Air instead of Water, G. M. Aylsworth, 86
Heating from a Central Station, W. H. Pearce, 430
Osmium Lamps, Prof. L. Lombardi, 287
Radiation and Illumination, (Prof. Lummar and others *cited*), 87, 287
List of Publications regularly Reviewed, 65, 181, 263, 251

Marine Engineering :—
Calcium Carbide, (for raising and sinking Submarine Boats), 444
Internal-Combustion Motors for Canal-Boat Traction, J. Kuster, 283
Lubrication of Marine Machinery, Lieut. H. C. Duryea, U.S.A., 78
Marine Propellers with non-reversible Engines and Internal Combustion Engines, R. Kennedy, 191
Note on the Direction of Rotation of Propellers on Twin-Screw War-Vessels, M. Laubeuf, 282
A Problem connected with the Screw-Propeller, W. F. Durand, 79
Producer Gas Plant for Ship Propulsion, B. Wiesengrund, 442
Report concerning the Design, Installation, and Operation of the (Steam) Turbine Engines of ss. *Revolution*, A. B. Canaga, Commander (U.S.N.), and others, 442
Screw-Propellers, 441
— Propulsion for War-Ships, G. Quick, 281
Starting Large (Marine) Gas-Engines, E. W. Roberts, 282
Steam-Raising by Means of Oil, (*see also* 52, 150), 443
Materials and Measurements :—
Cement Mills, A. Morel, 264
Chart for Calculating the Strength of Shafts and Pins, G. S. Walker, 428
Diagram for Finding the Diameter of Ball-bearings, P. S. Bushnell, 353
Effect of Clay and Loam on Cement Mortar, C. E. Sherman, 264
— of Wind on Roofs, T. Nielsen, *table*, 67
Lateral Earth Pressures, E. P. Goodrich, Jun., 428
Methods for Testing Air Motors and Hammers, M. H. Wickhorst, 183
Preservation of Wood from Fire and Decay, J. L. Ferrell, 428
Rotary Cement Kilns, A. Morel, 183
Steam and Electrically-Driven Cement Plant, (Edison's), 264
Testing of Building Stone, E. C. Eckel, 67
— Liquid Lubricants, K. Wilkens, 314
Vexatious and Fallacious Cement Tests, D. B. Butler, 67
Wrought Pipe, F. Riffle, 264
Mechanical :—
Air-Compressors, E. W. Köster, 290
Drilling Blast-Holes with Well Rigs, 430
Drop-Forging, D. Goddard, 90
Fly-Wheels on Machine Tools, J. C. Steen, 290
Large Floating Crane for the U.S. Government, J. S. Schultz, 430
New Skew Mechanism, G. T. Bennett, 195
Winding-Engine Problem, 290
Metallurgy :—
Action of Radium, Röntgen Rays, and Ultra-Violet Light on Minerals, G. F. Kunz and C. Baskerville, 274
Alloys used in Foundry Practice, P. Longmuir, *table*, 273
— — for Steel Making, Dr. J. Ohly, 186
Alumino-Thermics, H. Golschmidt, 75
Bottom of a Green-Sand Mould, T. D. West, 361
Brittleness of Steel, Prof. Le Chatelier, 361
By-product Oven Gas and Tar as Fuels for the Open-Hearth Furnace, D. Baker, 273
Casting Ring Pulleys, H. Willis, 275
Character of the Distortion and Rupture of Iron and Soft Steel, F. Osmond, Ch. Fremont, and G. Cartaud, 187
Chrome Steels, L. Guillet, *tables*, 436
Crucible Cast Steel and Tool Steel, R. H. Probert, 187
A Decade in American Blast-Furnace Practice, F. L. Grammer, 438
Effect of Impurities on Copper, E. A. Lewis, *table*, 271
Elastic Limit of Metals, 360, (*see also* 209, 434)
Elasticity of Circular Plates of Ingot Iron, Dr. M. Ennslin, 187
Electro-magnetic and Electrostatic Separation of Minerals, D. Korda, 532
Electrolytic Copper Refining, (Schwab and Baum's experiments), W. D. Bancroft, 74
Metallurgy *(continued)*—
Estimating the Value of Coke for Foundry Use, W. J. May, 271
The Ferro Metals and their Electrical Manufacture, A. J. Rossi, 72
Galvanic Zinc Deposits on Iron, G. Gabran, 75
Heat Treatment for Steel, *tables*, 363–5
Hints on the Inspection of Steels, Lieut.-Commander A. Moritz, U.S.N., 71
Iron and Steel Alloys, R. A. Hadfield, *tables*, 362
Light Aluminium Alloys, J. W. Richards, *tables*, 74
Manganese Ore as a Desulphurising Agent in the Foundry, (Wuest's experiments *cited*), J. Wangler, 72
Metallurgy of Homestake Ore, C. W. Merrill, 271
Molecular Mobility of Cast-Iron, (Outerbridge's Experiments), 272
New Autographic Method to ascertain the Critical Points of Steel and Steel Alloys, E. Saladin, 437
— Charcoal Retort Plant, E. A. Sjöstedt, 363
— Metal Melting Furnace, (Lunkenheimer's), 360
— Process for Toughening Steel Ingots in the Molten Condition, J. Riemer, 73
— Testing Machine, F. Foster, 435
Notes on Cupolas and Cast-Iron, C. Morehead, 273
— — the Welding of Aluminium, S. O. Cowper-Coles, 275
Oxy-acetylene Blow-pipe, E. Fouché, 74
Phenomena due to Repetition of Stress, F. Foster, *table*, 434
Preventing Pipes and Blow-holes in (Steel) Ingots and Castings, F. C. Weber, 76
A Problem on the Metallurgy of Cast-Iron, Dr. R. Moldenke, 272
Proportions of Regenerative Gas Furnaces with special reference to Open-Hearth Furnaces, H. D. Hess, 359
Side-Blown Steel Converters, N. Lilienberg, 273
Silicon Steels, L. Guillet, *tables*, 276
Some Applications of Copper in Engineering Practice, W. E. Storey, *table*, 360
— — — the Theory of Electrolysis to the Separation of Metals from one another, M. Hollard, 274
— Cupola Practice, (U.S.A.), R. H. Palmer, 275
Strength of Steel Castings at Ordinary and Higher Temperatures, C. Bach, 274
Styrian Steel, R. B. Hodgson, 361
Testing of Cast-iron, Dr. R. Moldenke, 360
Tests of Steel for Electric Conductivity, with special reference to Conductor Rails, J. A. Capp, 187
Miscellaneous :—
Burning of Pulverised Coal, C. O. Bartlett, 95
Candle-power Tests of Welsbach Burners, 451
Costs of various Heating Systems, J. B. Holbrook, 451
Drying Coal, C. O. Bartlett, 96
Efficiency and Colour of Osmium Lamps, Prof. F. G. Baily, 451
Maximum Illumination Output with Direct Current Arc Lamps, E. Richter, 452
Modifying Systems of (engineering shop) Management, H. L. Gantt, 452
The Sludge Disposal Act, A. G. Leigh, 96
Sub-aqueous Storage of Steam-Coal, J. Macaulay, 95
The Tonnage Laws and the Assessment of Harbour Dues and Charges, H. H. West, 291
Naval Architecture :—
Coaling at Sea, (Cunningham-Seaton Method), A. C. Cunningham, 191
Experimental Tanks for Testing Ships' Models, 77
Notes on the Construction of Stability Cross-Curves from Balanced Paper Sections, J. H. Heck, 190
— — Side Launchings, (launching of the *Galveston* and the *Benyuard*), W. G. Groesbech, *table*, 279
Petrol Motors on Fishing Boats, (the *Jean*), C. Birault, 78
Recent Devopments in Cargo and Intermediate Steamers, E. W. De Rusett, 529
Shipyard Economics, R. S. Hubbard, 371, 528
Submarine Boats, 528
Prime Movers :—
Arrangement and Construction of Steam Pipes and their Connections, R. C. Monteagle, 188
Brush-Parsons Steam Turbine, W. Chilton, *tables*, 520
Causes of the Bursting of Cast-Iron Valves in Steam Pipes, S. Périssé, 438

Prime Movers *(continued)*—
Comparison of the Different Types of Calorimeter, J. S. S. Brame and W. Cowan, *tables*, 368
Compression in Gas-Engines, A. Stritmatter, 76
Condensing Plant for High Vacuum with Limited Water Supply, W. H. Roy, 189
Corrosion of Steam Boilers, L. Vogt, 277
The Crossley Variable Cut-off Valve, (car petrol moters), 441
Cylinder Condensation and Valve Leakage in Steam Engines, Prof. J. T. Nicholson, 276, 364, 440, *table*, 517
The Design of Steam Turbine Discs, F. Foster, 278
Diagram for Adiabatic Expansion of Steam, S. S. Ekman, 279
Efficiency Test of, 1,250-kw. Steam Turbine for Interborough Co., New York City, A. M. Mattice, 439
Explosive Mixtures, L. Bairstow and A. D. Alexander, 441
Forms of Turbines most suitable for Low Falls, A. Steiger, 366
Gas Power for Central Stations, J. R. Bibbins, *table*, 277, 519
Heat of Generation of Superheated Steam, A. Griessmann, 521
Lines of Progress in the Efficiency of the Combustion Motor, E. C. Warren, 367
New Forms of the Steam Turbine, R. H. Smith, 277
Passage of Heat within a (steam) Boiler Heating Surface, P. Fuchs, 440
Pielock Superheater System, Prof. M. Buhle, 368
Process of Converting Fuel into Heating or Power Gases, (tested in the Royal Coal Mines, Saarbrücken), Jahns. 76
Riedler-Stumpf Steam Turbines, *table*, 519
Some Performances of Boilers and Chain-Grate Stokers, with Suggestions for Improvement, A. Bement, 518
Theoretical Indicator Diagrams, E. F. Williams, 188
Theory of the Cooling Tower, H. L. Nachman, 278
Use of Superheat in Steam Boilers, (Maiche system), D. Stapfer, 77
— — Superheated Steam, Prof. S. Bull, 518
Using Waste Heat from a Gas Engine, H. B. MacFarland, 441
Voght Gas Engine, H. A. Humphrey, 369

Traction, (*see also* Notes on Locomotive and Railway Engineering):—
Acceleration—Electric *v.* Steam, P. W. d'Alton and Dr. J. Mannheim, 87
Aërial Suspension Cableways, J. M. Henderson, 532
Brakes for Electric Cars, W. Park, 448

Traction *(continued)*—
Comparative Experiments with Saturated and Moderately Superheated Steam in Locomotives, Strahl, 289
Construction of Iron and Steel Railway Wagons, A. L. Shackleford, 449
— — Steel Railway Wagons, J. D. Twinberrow, 449
Creeping Rails, F. J. Allen, 88
Design of Locomotives and Motor Cars for High Speeds, A. Frank, 447
Disturbing Influences of a Locomotive's Reciprocating Parts, Prof. von Borries, 89
Electrical Reconstruction of the South London Tramways on the Conduit System, A. Millar, 288
Electrification of Railways, (U.S.A.), with Efficiency and Economy, 289
Four-Cylinder Compound Locomotives, A. G. de Glehn, 87
Improvements in Valve-Gears, J. Reikie, 194
Iron and Steel Railway Wagons of High Capacity, J. T. Jepson, 450
Locomotive Counter-Balancing, R. A. Parke, 289
Novel Types of Steam Locomotives, M. Buhle, 448
A Powerful Automobile Train, (California), 448
The Renard Automobile Train, Lt.-Col. G. Espitallier, 194
The 20-h.p. Hutton Petrol Engine, 448

Water and Sanitary:—
Bacteriological Methods in Water Analysis, C. E. A. Winslow and C. P. Hibecker, 290
Brussels Water Supply, A. Deblon, 196
Deposits in Pipes and other Channels conveying Portable Water, Prof. J. C. Brown, 195
Distribution of Mean and Extreme Annual Rainfall, (Symons' records), H. R. Mill, *table*, 94
Filter Wells, T. Verstraeten, 196
Lowering of Water Levels in the London Basin, C. Beadle, 93
Purification of Water (tropical) highly charged with Vegetable Matter, O. Chadwick and B. Blount, 196
The Riedler Pump, H. D. D. Barman, 196
Treatment of Sewage containing Trade Waste, K. F. Campbell, 93
Wrought-Steel Conduits for Gravitation and Pressure Water Supply, H. F. Lloyd, 93

Works Management:—
Emery Wheel Practice in Foundries, C. G. Smith, 91
Fixing of Piecework Rates, H. Diemer, 92
Manufacturing Costs and Profits, H. Hess, 290
The Operation of Isolated Plants, P. R. Moses, 195
Rapid Reduction in the Lathe as compared with Forgings, F. B. Kleinhaus, 90
Slide Rules for the Machine Shop, C. G. Barth, 531